

UNITED STATES DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

The status of mineral and energy resource evaluations of wilderness  
and roadless areas Utah, map scale 1:1,000,000

By

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including an accompanying pamphlet, Summary of resource potential

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Open-File Report 84-221

This report is preliminary and has not been reviewed for conformity with  
U.S. Geological Survey editorial standards and stratigraphic nomenclature.

<sup>1</sup> Menlo Park

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## Summary of resource potential

By Edwin W. Tooker

### INTRODUCTION

Twenty roadless areas that have been identified by the U.S. Forest Service (1979) as having wilderness aspects are shown on the map by Tooker and others, (1984) and their resource potential evaluated. Starred areas are those being considered in Utah Wilderness Bill HR 4516.

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| *1. Mount Naomi (4-758)  | 11. Fishlake Mountains (4-307)                     |
| 2. Stansbury (4-757)   | 12. Capitol Reef (NP-906)                          |
| 3. Lone Peak (NF-932)  | 13. Arches (NP-900)                                |
| *4. Birdseye-Nephi (Mt. Nebo)<br>-Santaquin (4-726, 4-729,<br>4-720) | 14. Canyonlands (NP-905)                           |
| *5. High Uintas (NF-931)   | *15. Dark Woodenshoe Canyon (4-436)                |
| *6. The Box-Death Hollow (4-259)                                     | 16. Red Canyon (4-254, 4-260)                      |
| *7. Wellsville Mountain (4-760)                                      | 17. Bryce Canyon (NP-903)                          |
| 8. Burch Creek (4-765)   | *18. Ashdown Gorge-Cedar Breaks<br>(4-253, NP-908) |
| *9. Dromedary (Storm Mountain)<br>(4-752)                            | *19. Pine Valley Mountain (4-251)                  |
| 10. Dinosaur (NP-913)  | 20. Zion National Park (NP-930)                    |
|  | *21. Mount Timpanogos                              |
|  | *22. Mount Olympus (4-753)                         |

The brief statements pertaining to an evaluation of the resource potential for these areas by Tooker and others (1984) that follow are based on two levels of information. Areas 1-6 were the subject of field investigations and examinations of public records by the U.S. Geological Survey and the U.S. Bureau of Mines; these investigations are reported in detail in the publications listed on the map explanation. Areas 7-22 have been evaluated by personnel of the U.S. Geological Survey and reviewed by the Utah Geological and Mineral Survey on the basis of general knowledge about those areas and on data in the computer files maintained by both organizations.

The following classification shows the range of possibilities considered for the occurrence of resources in these wilderness areas, and was used on the accompanying map. Class A potential: Includes areas in which there are numerous occurrences or deposits having a record of production and a terrane whose geologic, geochemical, geophysical, and geoeconomic characteristics are considered favorable for the presence of extensions to those deposits; no areas of this class occur on the map. Class B-1 potential: Includes untested areas that comprise geologically favorable terrane for hosting extension (of the size and type) of known mineral deposits that occur in adjoining areas. Class B-2 potential: Areas for which (a) geological projection from regional knowledge is moderately favorable even though the immediately surrounding areas may have few or no deposits or occurrences, or (b) only moderate expectation of extending resources into the wilderness area is possible on the basis of the small size and irregular distribution of deposits or occurrences in adjacent areas. Class C potential: Areas in which there are no known occurrences and the geology is considered inhospitable for the occurrence of

mineral or energy resources. Class D: Areas for which insufficient information is available to make a judgement; no areas of this type are shown on the map.

## RESOURCE POTENTIAL OF WILDERNESS TYPE AREAS IN UTAH<sup>1</sup>

### 1. Mount Naomi roadless area--B-2 potential

Located along the crest of the Bear River Range northeast of Logan, Utah. The bedrock of this area ranges from late Precambrian through Paleozoic age and is part of the upper plate of one of the thrusts of the Sevier overthrust belt. Known mines and prospects within and adjoining the area have explored or developed small lead, zinc, and copper deposits, but have had no significant past production. Phosphate-bearing strata are present but probably are too thin to be considered as a viable resource. Potential sources of limestone and quartzite for agricultural or construction uses are present, but are also abundant closer to areas of use. The area is moderately close to the oil and gas fields of Utah and Wyoming that occur in lower plate rocks, but any resource potential in this area is untested and the producing horizon is very deeply buried.

### 2. Stansbury roadless area--B-2 potential

Located approximately 40 mi west of Salt Lake City, Utah, in the Stansbury Mountains, the area is mostly underlain by Paleozoic sedimentary strata of the upper plate of one of the thrusts of the Sevier overthrust belt and some intrusive igneous rocks of Tertiary age. Mining for small deposits of copper, gold, iron, lead, silver, and mercury ores has been conducted sporadically along the margins of the roadless areas, resulting in very small production. The conclusion is that a moderate potential exists for the presence of additional deposits of the size and grade of past deposits in comparable rocks within the roadless area. The oil and gas potential in lower plate is untested and unknown, that in upper plate rocks is very low. No coal deposits are present; warm springs at the north end of the range may have geothermal potential, but this can not be extended into the main body of the range. Limestone and dolomite are mined a short distance outside of the roadless area, but extensions of similar deposits of economic grade in the sedimentary formations has not been determined.

### 3. Lone Peak Wilderness area--B-1 potential

Located in the central Wasatch Mountains at the range front adjoining suburban Salt Lake City, Utah, the bedrock of the Lone Peak area is composed of sedimentary strata of the lower plate of the Sevier overthrust belt and intrusive and volcanic igneous rocks. The area adjoins the highly productive Park City and American Fork mining districts, which have produced large quantities of copper, lead, zinc, molybdenum, silver, tungsten and gold ores. Part of the area has known subeconomic resource for molybdenum, but a

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<sup>1</sup>Areas in italics to be considered in Utah Wilderness Bill HR 4516 98th Congress, 1st Session.

low potential for the other metals. The area has little or no potential for coal, oil, gas, or geothermal resources.

4. Birdseye-Nephi (Mount Nebo)-Santaquin roadless areas--B-2 potential

These areas are clustered in the Wasatch Mountains about 55 mi south of Salt Lake City, Utah, approximately at the junction of the Nebo thrust fault and the range front fault. Upper plate rocks are mainly of late Precambrian to Permian age and are in fault contact with lower plate Mesozoic shales. Locally both plates are overlain by sedimentary and volcanic rocks of Tertiary age. Mining of small ore bodies in upper plate carbonate-rich rocks for copper, lead, zinc, gold, and silver in adjoining areas resulted in very modest production prior to 1920. Extension of these deposits into the wilderness areas is possible. Potential for gypsum in lower plate strata is moderate to low; uranium is also present but its resource potential is considered to be low. The potential for limestone and dolomite suitable for use in the production of cement and as smelter flux is high. Oil and gas deposits characteristic of those in the lower plate of the overthrust belt elsewhere are a possibility for testing, but the potential is considered low at this time. There are no indications of coal or geothermal resources in these areas.

5. High Uintas Primitive area--B-2 potential

This area straddles the main divide of the Uinta Mountains, some 55 mi east of Salt Lake City. Bedrock consists of quartzite, arkose, and some shales of younger Precambrian age. No known metal mines or deposits occur in the area; some small subeconomic concentrations of iron minerals occur along faults. The area could provide a source of ornamental stone, but this commodity is also abundant closer to urban areas of use. Productive oil and gas fields in lower plate rocks of the Sevier overthrust belt occur north of the steeply dipping North Flank fault which marks the northern boundary of the range; however, a potential resource beneath the primitive area is unlikely. No coal or geothermal potential is indicated.

6. The Box-Death Hollow roadless area--B-2 potential (B-1, revised)

This area, which is located in south central Utah, about 5 mi north of Escalante, contains gently folded Paleozoic and Mesozoic sedimentary rocks. The only mining activity in or near the area has been for road metal. A single thin discontinuous seam of coal in the western part of the area competes with thicker better quality coal in the Kaiparowits Plateau field a few miles outside of this area. Exploration drilling for oil and gas in and adjoining the northern part of the area was unsuccessful (Wier and Lang, 1983), but a source of CO<sub>2</sub> gas was identified. Subsequent study by industry here confirmed the presence of a field of high purity CO<sub>2</sub> in sedimentary rocks along the Escalante anticlinal structure. The field may extend into the wilderness area along that structure, justifying upgrading the resource classification from B-2 to B-1.

7. Wellsville Mountain roadless area--B-2 potential

Located about 10 mi west of Logan, Utah, the area is underlain mainly by Paleozoic rocks on the upper plate of one of the thrusts of the Sevier overthrust belt. Some small mines, claims, and prospects occur at the southern end of the range but have yielded only minor amounts of copper, lead, silver, zinc, and antimony ores. Any oil and gas potential in lower plate rocks would be at great depth. There is no known coal or geothermal energy potential.

8. Burch Creek roadless area--C-potential

Located southeast of Ogden, Utah, in the range-front of the Wasatch Mountains, the Burch Creek area contains mainly older Precambrian crystalline rocks and overlying sedimentary strata of Cambrian age, both lying within the lower plate of the Nebo-Charleston overthrust fault in the Sevier overthrust belt. There is no evidence of ore occurrences, or of oil, gas, coal, or geothermal energy deposits in this area.

9. Dromedary (Storm Mountain) roadless areas--B-1 potential

Located east of Salt Lake City, Utah in the Wasatch Mountains range front north of the Lone Peak, the area is underlain by Precambrian, Paleozoic, and Mesozoic sedimentary rocks of the lower plate of the Sevier overthrust belt. Although there has been no recorded production for this area, geologic features characteristic of silver, lead, zinc, copper, and gold ore producing areas of the western part of the Park City district extend into the eastern part of the Dromedary area. The region has no known oil, gas, coal, or geothermal energy potential.

10. Dinosaur area--B-2 potential

This area lies about 12 mi east of Vernal, Utah, close to the Utah-Colorado border. The bedrock is mainly Paleozoic and Mesozoic sedimentary strata on the south flank of the Uinta Mountains uplift. Scattered gold placers and phosphate deposits occur mainly along the margins of the area, but production has been minimal and its potential for similar type deposits is considered to be low. The strata beyond the roadless area contain minable coal and oil fields; potential for coal and oil within the area is unknown, but probably low. There is no known gas or geothermal energy potential.

11. Fishlake Mountains roadless area--B-2 potential

Located east of the Marysvale mining district in south central Utah, this area lies in the northeastern part of the Marysvale volcanic field, which overlaps the west edge of the Colorado Plateau. Although there are no known metal or nonmetal deposits in the area, its resource potential is believed to be moderate owing to possible occurrences of gold, uranium, and potash deposits which characterize the Marysvale district. Organic fuel resources are unknown and unlikely. Potential geothermal resources occur east of the area.

12. Capitol Reef area--B-2 potential

Located west of the Henry Mountains in the heart of the Colorado Plateau, this area is underlain by generally undeformed Mesozoic sedimentary rocks. There are numerous small occurrences and deposits of copper, uranium, and vanadium in and peripheral to the area. These have been only minimally productive and the resource potential for similar deposits is considered to be low. The Henry Mountains coal field is located on the east side of the area, but the main mining areas lie well outside the roadless area; the resource potential for coal within the area is considered to be low. There is no known potential of oil, gas, or geothermal resources.

13. Arches area--B-2 potential

Located in east central Utah, the Arches area is on the north side of the Colorado River about 60 mi southwest of Grand Junction, Colorado. The geologic setting in the Colorado Plateau is undeformed sedimentary rocks of Mesozoic age. Deposits of uranium, vanadium, manganese, and copper have been mined or prospected on or near the northern border of the area. Although close to Moab, Utah, which is a center for uranium and vanadium mining, the resource potential is considered minimal because of the generally irregular distribution of the deposits of this type. There is no known coal, gas, or geothermal potential for the area; helium is produced north of the area, but is not considered to be a resource in this area.

14. Canyonlands area--B-2 potential

This large area is located southwest of the Arches area along the Colorado River. The bedrock is mostly undeformed Paleozoic and Mesozoic sedimentary rocks that are hosts for copper and uranium occurrences along margins of this area. No known mining production has been reported, and the resource potential for metalliferous deposits is considered to be low. Small oil fields occur in the region peripheral to this area, but oil resource potential within the area is considered to be low. There is no known coal, gas, or geothermal energy potential.

15. Dark Woodenshoe Canyon roadless area--B-2 potential

The area is located about 30 mi west of Monticello, Utah. Uranium, copper, and vanadium deposits occur in and peripheral to the area in undeformed Paleozoic and Mesozoic strata. Large uranium districts flank the east and west sides of the area, but the potential for undiscovered deposits of these metals is considered low because of the generally small size or low grade of the peripheral deposits. There is no known coal, oil, gas, or geothermal energy potential in the area.

16. Red Canyon roadless area--B-2 potential

Located in the Colorado Plateau region between Panguitch, Utah, and Bryce Canyon, this area is underlain mainly by clastic Mesozoic strata. There are no reported metal-bearing ores or non metal or energy materials present. It is possible, however, that some of the coal beds of the Kaiparowits Plateau coal field may project into this area.



17. Bryce Canyon area--B-2 potential

Located east of Cedar City, Utah, in the region along the southern margin of the Colorado Plateau, this area is underlain mainly by undeformed Mesozoic clastic and shale strata. No metalliferous ores or non-metal commodities are known to be present, but the Kaiparowits Plateau coal field adjoining the western edge of the area may extend into it. No oil, gas, or geothermal resources are reported.

18. Ashdown Gorge-Cedar Breaks areas--B-1 potential

Located just east of Cedar City, Utah, these areas include faulted Mesozoic strata and Tertiary volcanic rocks at the border of the Colorado Plateau and Basin and Range physiographic provinces. The resource potential is based on the coal deposits of the Kolob Terrace field which extends into the southern part of the area. No metallic ore occurrences, nonmetal, or oil or gas resources are reported. Geothermal potential is very low.

19. Pine Valley Mountain area--B-2 potential

Located north of St. George, Utah, the area is chiefly underlain by Mesozoic sedimentary rocks and Cenozoic basalt. Deposits and occurrences of silver, copper, uranium, and vanadium have been mined or prospected along the southern margin of the area, but only a small production is reported. A coal field occurs north of the area and coal beds may extend into it.

20. Zions National Park area--B-2 potential

This area is located about 30 mi northeast of St. George, Utah, on the western edge of the Colorado Plateau. The rocks of the region are mainly Mesozoic sedimentary strata and Cenozoic basalt. The area's potential is based on proximity to a small oil field on the southwest and the Kolob Terrace coal field on the northeastern side. There are no known metal, nonmetal, gas, or geothermal energy potentials.

21. Mount Timpanogos--C potential

Located in the Wasatch Mountains range front east of Provo, Utah, the area is on the upper plate of the Sevier thrust belt and composed of Paleozoic carbonate rocks. These have been folded. A number of old mine workings for base metals have been located, but have no record of production. The replacement and vein deposits were very small and discontinuous. There is no record of fossil fuel, uranium, or geothermal energy resources.

22. Mount Olympus--B-2 potential

Located in the Wasatch Mountain range front east of suburban Salt Lake City, the area is composed of Precambrian crystalline and overlying lower Paleozoic quartzite and carbonate rocks of the lower plate of the Sevier thrust belt. The area lies 5-20 mi northwest of the Park City, Brighton, and Alta districts. The very old mining claims present lie along the eastern margin of the area in Paleozoic sedimentary rocks, but have no record of production. There is no indication of fossil fuel, uranium, or geothermal energy potential.

## SUMMARY

The informational basis for classifying the mineral and energy resource potential of twenty-two wilderness type roadless areas in Utah, shown on the accompanying map, has been summarized. The U.S. Geological Survey and U.S. Bureau of Mines have made field investigations and resource evaluations in 6 areas (Mount Naomi, Stansbury, Lone Peak, Birdseye-Nephi-Santaquin, High Uintas, and the Box-Death Hollow). The remaining 16 areas were evaluated on the basis of scientific knowledge by personnel of the U.S. Geological Survey in consultation with the Utah Geological and Mineral Survey and from data in their respective resource computer files. No areas are considered to have Class A (high) potential; 4 are evaluated at the Class B-1 (intermediate to high) level; 16 are placed in Class B-2 (low to intermediate) potential level; and 2 are placed in Class C (low potential). No Class D (unknown) potential areas are recognized.

## REFERENCES CITED

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- Weir, G. W., and Lane, M. E., 1983, Mineral resources potential map of the Box-Death Hollow Further Planning Area (RARE II), Garfield County, Utah: U.S. Geological Survey Miscellaneous Field Studies Map MF-1319-B, scale 1:48,000.